of the (inaudible) surrounding that area. I agree with a lot of the comments that have been said up to this point. We currently -- my role in Nemours is as the telehealth administrator. We are doing quite a bit in this field. We are serving children who have acute care needs to chronic care needs within the home, within the school, and even on cruise ships. And we're doing quite a bit of work with primary care organizations and also other community hospitals and health systems.

One of our biggest challenges is that we do service a large Medicaid population. While we service many urban areas, a lot of these families don't have access due to the cost of the services. So, that's one of our biggest hurdles, if you will, enabling and allowing us to be able to provide the telehealth services into those settings where they may not have access.

So, we're excited about the opportunity not only in the urban settings but also in rural settings to begin to think about what we can do and how we can have a better exchange within the

home so that our providers can provide these services into those locations. Many of our patients and families travel many miles in order to access this care, so we think it's very, very important and relevant at this point in time to be able to have this discussion today and really think about what we can do in order to improve the connectivity. So, thank you very much for the opportunity to speak.

DR. AHERN: Thank you, Carey. We really appreciate your input. One quick follow-up question, if I may. Of the services that you described, how much of it is wireless would you estimate?

MS. OFFICER: Probably over 50 percent. We have found that really works better in the home setting and we have found it to be difficult in other settings like schools. So, we're a little bit challenged from a wireless perspective to have that kind of access so we try to go hard wire wherever we can. We have found that the connectivity especially from a video perspective

has been better.

DR. AHERN: Great, thank you, Carey. Justin, if you could queue up the next participant.

OPERATOR: Certainly. Next we'll go to the line of Bill Jansen of MetalQuest. Your line is open.

MR. JANSEN: Good afternoon. Thank you for having me. I'll try to be as eloquent as my colleagues and as concise and succinct.

When I originally applied for the listening session, what does MetalQuest have to do with healthcare? Such an odd name. Well, actually, one of the big parts of our business is operating as a trustee for bankrupt healthcare providers, whether it's a large urban center, a critical access hospital, or an individual provider. So, we see every day the need for broadband, just connectivity in general, especially in rural areas or areas where people are more economically challenged.

So, we deliver historical data and we

deliver real- time data, but oftentimes we can't deliver the data for someone who needs to undergo a test. So, if we had that broadband -- whenever the person is educated enough to use -- we can cut costs tremendously across the country in terms of invasive tests, tests of any kind, and just generally the patient would be happier knowing that they can access their data. So, access to data is critical.

We also have the same problem with hospitals. Hospitals will call us, or a provider will call us, they need access to data. We may have a lot of imaging data, but we can't effectively deliver in real-time to, say, a rural facility.

So, those are the big challenges that we see every day, and there is definitely a digital divide. We especially see this with low-income and we see it with the elderly population; they just don't know how to use the technology to take care of their healthcare needs. So, that's all I have and thank you.

DR. AHERN: Thank you, Bill, that was very helpful. I do have a follow-up question. I think there is a major concern among the provider community about some of the uncertainty with coverage and the implications of changing healthcare insurance policies in terms of impact on providers. So, are you seeing more and more risk for providers as a consequence?

MR. JANSEN: Absolutely. I had that conversation today. Changing reimbursement has put especially smaller providers, rural providers, at risk. Large urban providers, it puts them at risk. A lot of that is because the population they serve, they're indigent or they're receiving Medicare, Medicaid or their insurance policies just don't pay enough.

So, one thing that's kind of interesting..., if you believe the data, there will be 400 rural hospitals closed in the next several years. So whether that's true or not, whether it's 100 or 500 it's still a lot. So not only will the patients be without an acute care

facility to attend to their healthcare needs, they won't even be able to get the data to take another provider. So, yeah, we see reimbursement issues every day as affecting the health of the entire provider community. Thank you.

DR. AHERN: Thank you. Again, one follow-up question, Bill. Do you see the providers are doing poorly because they try to adopt broadband health services and aren't successful in doing that? Would that be an accurate appraisal of what you've seen?

MR. JANSEN: Yes. So, they want to adopt broadband technology but the implementation costs might be too high and/or but probably more importantly is the interoperability just isn't there. So, if you're a large urban center you may have a healthcare exchange and can easily move information. If you're using a large EHR system maybe you can move information between like users of the same EHR. But, yeah, interoperability is a huge stumbling block for providers, especially smaller providers. They want to provide good care

and they do the best they can but they could do better with good broadband, whether it's fixed or whether it's wireless and interoperability issues would go away.

DR. AHERN: Thank you, Bill. I appreciate your answers to those questions. We do have one remaining participant but there's a chance that we could get another one before we go to open discussion, so don't miss your opportunity.

Justin, if you would go ahead and ask our next participant to introduce themselves.

OPERATOR: Certainly. It will come from the line of Edward Miller, MD Anderson Cancer Center. Your line is open.

MR. MILLER: Thank you, and thank you to the FCC for hosting this call today. My comments aren't too different from the others that have spoken out.

We're the largest cancer hospital in the country and in urban areas often have access to specialty care for either oncology or heart or

whatever their complex health condition may be. But we've experienced here in Texas, a large state, a lot of rural areas, especially when you get to west Texas, there aren't enough specialists that can take care of the needs of the community. And of course our experience is only with oncology and a lot of these people cannot travel but just because it's rural or it's underserved communities.

So, we have been participating in a program that trains primary care providers with specialties to be more attuned to specialty care, they can provide more care than they would have been able to. And we do this through tele-mentoring and other programs like that and it requires broadband to have videoconferences and share data and slides and pictures, etcetera. By doing this it allows patients to be treated in their community at the right time, it doesn't cause delays in care which can end up making their cases much more complex and it can improve outcomes or reduce costs.

But the thing we're running into is that there is a severe lack of broadband, or even wireless services in certain areas that are very rural and the faster uptake in those areas we could definitely expect greater outcomes from these health episodes. And, again, it's not just cancer-specific but you could get a lot more specialty care into primary care offices and they'd be more aware of the conditions that do need to go into in-patient settings in a hospital versus being able to stay home and being able to be monitored remotely as many other groups have already expressed.

So, I guess that's kind of what our hope would be, just that access would increase and I think that would open up the door for a lot of the other programs. Again, I thank you for hosting the call.

DR. AHERN: Thank you, Edward. Really appreciate that input.

I think we're at a point now where we can open up all the lines, Justin, and have an

open discussion. If we could go ahead and do that I will ask my colleague, Dr. Gibbons, to maybe begin with a question or two to get the conversation going. This is, again, now an opportunity for all of the participants on the call to comment, respond to the questions, and have a dialogue.

DR. GIBBONS: Great, thanks, David. Again, thank you everybody. This has been fantastic. It's gone above and beyond what we'd hoped for.

I've heard a number of things that I found very, very interesting and fascinating. For one, Hank, in the beginning you were pretty clear about saying that really the need for speed is going up, and you even said that your T1 lines are basically insufficient currently and that's only going to get worse in the future, if I understand you correctly.

But at the same time, I think I heard from Jon Zasada that -- and I want to make sure I'm hearing the right thing -- that 10-3 is

actually okay for you guys, or were you saying that you'll take it because that's all you can get? I'm wondering in general, not only at Hank and Jon, but I'm wondering across all of the groups if the need for broadband speeds are going up as Hank described, and in particular Jon because you mentioned 10-3.

And then there is a second question. I'd love to hear more about the virtual ER program, how that is actually working and if others are doing things like that. Thanks so much.

MR. FANBERG: This is Hank. I'll comment that, yes, I think you have it correctly. And the specific example that I can give. So have one of our San Antonio hospitals is a transplant center and they have patients literally scattered across the state of Texas. There is a certain amount of testing that needs to be done ahead of time when you go on the registry for an organ transplant. And in some of these communities where we have these people there is insufficient

bandwidth just to conduct a virtual visit with the testing that needs to be done to transfer the information from the rural location into San Antonio. And those connections, all that we have available there right now are T1 lines and we're finding that we can't even get these visits done trying to send what I consider to be relatively -- the data that would really need minimal bandwidth, but we're having difficulty with that.

DR. GIBBONS: Do you have any sense of what a minimum might be for you guys? If you could choose what the minimum would be, what would you say?

MR. FANBERG: Well, it's going to depend upon the location and the area. Someone earlier had referenced the FCC has what they consider the standard minimum which I don't recall the number. But, frankly, when you start talking about if you're sending data, if you're sending the visual (inaudible), i.e., any of your images, you really probably need to start with a baseline of about 10 megs, and sometimes during the day that probably

will not be sufficient but it's a good starting place. We like to do a minimum of 45 if it's available, but that is not always the case.

DR. GIBBONS: I want to clarify because I think you're saying something very important. You're suggesting that, first of all, the need is not a static need, it's not whatever, 100 megs all day long, but it can and does vary throughout the day but to the extent that we don't have the availability when the need is greatest then the entire thing is insufficient. I think if I understand you correctly that's an important insight that we have to think about at the FCC in terms of trying to decide what's adequate. It's more than just some sort of a number, whatever that number is, because the needs vary throughout the day, if I understand you correctly.

MR. FANBERG: Yeah, although again, there is a minimum threshold that will be needed, and I think experience says that that minimum -- and maybe I'm going back to the Connect America Map which came out with some standards, if a

certain amount of bandwidth was available they said you had sufficient bandwidth in the community, and our own experience is that their information is not necessarily correct all the time.

DR. GIBBONS: Great. Others?

MR. ZASADA: This is Jon Zasada from the Alaska Primary Care Association again. I was actually just trying to get back into some testimony that we provided to the Alaska legislature this spring, and I'd also defer to Verné Boerner, our colleague with the Alaska Native Health Board. We will provide some additional data or information after this meeting regarding speed. But I guess in my personal experience in talking with health center directors they are okay with the speed that they have. There are lags that affect the flow of appointments and the flow of work, but I think in particular very isolated communities understand the limitations of the connections that they do have. I will say also that in communities that

don't have dedicated connections the need for speed of bandwidth in a dedicated connection is of vital importance. And I think this goes back to the person that was talking last, in non-dedicated connections, in a very small community it can very quickly take up to four hours to transmit out a single image for review by a distant provider and ties up the rest of the online work that the clinic may be doing.

Again, all that being said, we like everyone else are continuing to modernize our EHRs, our electronic health platforms. We were just talking yesterday about expansion of in-home and in-community monitoring and all of those require a constant increase in both bandwidth and speed. Those changes are being developed by the commercial providers here in Alaska but they come at a very, very large cost which to this point has been borne without interruption by the Rural Healthcare Fund and with 7.5 percent proration that we saw in 2016 and the peril of a much higher proration for 2017 and beyond. The modernization

of that fund is of the highest priority for both the non-tribal and tribal systems and for rural hospitals here in Alaska.

DR. GIBBONS: Great, great. So, again, correct me if I'm wrong but I'm not hearing you say that lower bandwidths are really adequate. You're working with them and you're happy for what you can get but more would definitely be better. That's what I'm hearing, right?

MR. ZASADA: Isn't more always better?

(Laughter)

DR. GIBBONS: Well, yeah.

MR. ZASADA: And, again, I think my homework that I'm taking away for you all and for future sessions will be doing a survey with our IT directors to try and flesh out some of these issues in additional detail so that we can share that information with you going forward.

DR. GIBBONS: Okay, great. And just one final question. Can you tell us a little bit more about the virtual ER?

MR. ZASADA: I can tell you a little bit

and then, again, get you more information as we go. So, basically a patient would present in an emergent situation at the community health center that's located in Dutch Harbor, Alaska which for those that don't know is one of the largest fishing communities in the United States. It has an annual influx of tens of thousands of seafood workers that augment its regular population of I want to say 2,000 to 4,000 people. It does not have a critical care hospital so the emergency room does exist in the community health center. Again, the patient appoints, there's a dedicated connection to Providence Alaska Medical Center in Anchorage. The medical staff at the health center use a range of diagnostic equipment that provides direct feed to the hospital and they are guided in the care of the patient until a medevac can be arranged. Just so you know, a medevac can be arranged -- with the weather in the distant North Pacific can sometimes take a number of days in worst case situations and can cost between $50- and $100,000.

DR. GIBBONS: Wow. Wow. Thank you very much.

DR. AHERN: Thank you, Hank and Jon, for your comments. Any other comments on the topics that we've been discussing?

MS. BOERNER: This is Verné Boerner with ANHC.

DR. AHERN: Yes, go ahead, Verné.

MS. BOERNER: Thank you. I just wanted to add a couple of statements in addition to Jon's. Again, I think he's done a fantastic job describing the situation.

Some of the other issues that we have seen with regards to speed, not just with the transmission of medical files and records and such, is actually processing and doing the administrative work. A lot of the enrollments and billing that our members have engaged in, they're all sort of online- based and if there's an interruption in the transmission of that or if the speed is too slow it can cut off hours' worth of work that will have to basically be started over

again. So, it does affect the overall productivity of our centers as well. So, that's just one addition that I wanted to add.

Parity is something that the tribal health programs have really stood for and fought for as well. So, the 10-3 is a good baseline but the problem we have is that it hasn't always been consistent or consistently available or reliable. Again, I do think that there are improvements being made, but again, it really depends on that sort of consistent and predictable support that the tribes, the broadband providers, our partners, and the state have sort of worked together. And as Jon has said, addressing the Rural Healthcare Program fund is of utmost priority for our IT usage and broadband usage.

DR. GIBBONS: Great, thank you.

DR. AHERN: Thank you, Verné. I think I might at this point take an opportunity to mention that in the two-page document that you were sent with the questions we also have a request for any research or case studies that you might want to

share with us. So, as was mentioned in the previous participants, if there is additional information that you want to provide we would be very pleased to receive that at connect2health@fcc.gov. That would be very helpful to us.

On that note, I might ask if Lovisa Gustafsson is still on the call from the Commonwealth Fund. Lovisa, I know that the Commonwealth Fund has been working on a breakthrough portfolio and I wondered if there were any projects that you might be able to talk about that would be relevant here in our discussion.

MS. GUSTAFSSON: Hi, yes. I think a lot of our work to date has been focused around consumer access to their healthcare data, interoperability, and a lot of those sorts of issues. So, this is a newer area that we're starting to wade into in relation to that sort of work. So, it's really helpful for me to hear a lot of these issues and the problems that

providers are bringing up given that we're not out in the field working with providers on a day-to-day basis to help inform us in terms of what our priorities are going to be going forward in terms of how we can be thinking about these issues and how we can potentially be doing grant-making around them to solve some of these problems that you are raising. So, really appreciate the opportunity to hear from all of you and your experiences and any of the problems that you are experiencing today or potentially foresee coming down the road. So, thank you.

DR. AHERN: Wonderful. Thank you, Lovisa, I appreciate that. Chris, did you have another question that you wanted to pose?

DR. GIBBONS: Yeah, sure. I was thinking about what we've heard and I also found what Bill Jansen at MetalQuest said very interesting. Similar in some ways to Lovisa because these are not provider organizations, yet the work that they do is critical to provider organizations. At one level, it illustrates for

us -- if I'm understanding you correctly and you can correct me if I'm wrong -- that when we think about broadband and supporting health and supporting providers we have to think more broadly than just supporting hospitals and doctors and maybe consumers in their homes and there are other types of organizations like MetalQuest that are critical to the healthcare process.

I'm wondering if, Bill, you or others might have any thoughts for us about any other kinds of organizations that may not be providing healthcare from a physician or other typically recognized healthcare provider, but are critical in the healthcare process that you think it would be important to have us think about and try to be inclusive of as we strive to develop or inform the development of priorities and other things at the FCC.

MR. JANSEN: Hi, this is Bill Jansen. I can think of any number of companies and probably industries that need to be included in the discussions. But one thing that comes to mind

easily is just companies that are working on clinical systems and their ability to provider interoperability. So, those kinds of companies really affect not only the provider and the consumer but all the players that are in between. And, of course, you need to have the big carriers involved in it. One of the last things you want to see is limited speeds.

And to answer the previous question, I think really your kind of baseline minimum is 10 megabits at the very minimum. We can hardly push data out for less than that unless it's highly compressed.

But I think that most of these questions are not a question of technology, it's really a question of economics. I mean, we communicate with the Voyager that's beyond our solar system all the time. So, if we can do that on technology built back in the '60s and '70s surely all these other issues can be easily solved.

But, again, I think one of the biggest challenges we have are people that are either

elderly, they don't understand the technology, and people who are of low income, who don't have access to technology. And, of course, there are people in rural areas who don't have access to technology. But, again, that goes back to if you're a provider of technology do you want to go after three people? You want to go after 100 people that live in Alaska or some other far-flung location.

So, that's really, I think, maybe at the heart of it. I don't think it's much of a technology issue. It's really a question of what policy do we want to create to help our country move ahead in terms of its health.

DR. GIBBONS: So, assuming that to be true -- and I'm not saying it's not, I believe you -- what would your suggestions be for an FCC? I mean, okay, this is not a technology issue or at least not mainly, you say; if that's the case, do you see a role for the FCC assuming that these things would be within its mandate? I'm just really trying to get your perspectives on how an

FCC can help address the problems that you see that are impacting utilization of broadband in greater ways to achieve health outcomes. What can we do or what recommendations might you have for an agency if you assume the problem is not a technology problem at its core?

MR. JANSEN: Well, I think that this is a very good start, bringing together interested parties and stakeholders with the FCC acting as a facilitator in a policy body that can bring together all these disparate groups and kind of make sense out of it. That's one of the biggest challenges, right? Getting the people together and figuring out some kind of consensus on a path forward. I mean, that's the toughest part.

Again, I don't think it's the technology but in this case how do you bring groups together, how do you reach a consensus. I think that's the role of the FCC. Then, of course, once that consensus is reached being able to put out the regulations so we're all playing by the same rules.

But, you know, that's tough and with all the changes in technology, technology getting better, of course keeping up with change is its own set of issues. So, it's definitely a big challenge to overcome but it's definitely not impossible.

DR. GIBBONS: Great. Thanks so much.

DR. AHERN: Thank you, Bill. Chris, if I may, we have another question thinking about the future, and that is certainly part of the question set that we had sent out. If participants on the call have thoughts about current and future broadband- enabled health applications could they comment on that? And what kinds of services are we talking about and what kinds of bandwidths and speeds will be need, thinking about the future as healthcare continues to transform? Do folks have thoughts about that?

MR. FANBERG: I think, David -- it's Hank. I'd just like to make a quick comment that I think will touch on your question, but I want to go back to the immediate prior discussion.

The FCC sets the regulations as to how we can -- I don't want to say use broadband, but in terms of the programs that it has to subsidize the cost of broadband. And when I talk about the need for speed I'm also talking about the need for speed within the FCC to change its policies. Two years ago I petitioned the FCC to do some of the things that we're talking about today and I'm still waiting for a reply.

So, as the policymaker which impacts what we all can do and how we can do it and who is eligible to be a part of it are going back to the pilot program, and I think this rule still stands, where there were prohibitions on being able to share your circuits with non-healthcare providers. These are policies that need to be addressed, that need to be changed, and in my opinion these are regulatory issues and not legislative issues and those are things that need to be addressed in the process also. And if we can address some of those things that will help the innovation and help us get to where we need to go in terms of being able

to reach new places, new locations, reach mobility, and provide a variety of services. But it's those underlying policies that need to be addressed.

DR. AHERN: Thank you, Hank. Appreciate that. I think the question on the table was about the future and services that we can imagine two years out, five years out. Things are moving very quickly with respect to healthcare reform and digitalization of healthcare which we see every day now in many ways. What are some of the opportunities and solutions that we think are going to emerge for which broadband is going to be critical?

MS. OFFICER: This is Carey Officer with Nemours. As we think about what the future entails for the children that we're serving across a pretty wide geographic area, we really foresee remote monitoring and providing care within the home as a critical aspect, predictive, analytic, and really getting to the source before and being proactive before something sets in and a child

ends up in our emergency room or ends up as an inpatient in our health system. So, it's really pushing care into the home and if we don't have the right type of connectivity into the home and at a cost point that these families can subscribe to then that will never become a reality.

MS. HAHN: This is Beth. Also, to understand that we're all out here trying to do this without any funding. There is no reimbursement for telehealth, telemonitoring, in patients' homes but we're doing this because we know that this is for the benefit of the patient and the care that they need to receive.

Our cardiology patients and one care patients, if they have connectivity to their doctor they can save travel of 80 to 100 miles and a two-hour travel to providers where there is a lack of providers and they have to wait weeks to get into a specialty provider sometimes. So, we're all grassroots trying to do what needs to be done behind the scenes with the capabilities that we have and without reimbursement. The medical

community isn't supportive because they know there is a lack of providers and that they can't see everybody one-on-one as much as they would like to. We get referrals, "Do you have cardiology telehealth?" Because the providers know that this is what's needed. But we're here in the background scrambling trying to figure out how to provide it to them at our own cost.

DR. AHERN: Thank you, Beth. So, one of the barriers, one of the challenges, is obviously the funding and sustainable funding in order to support the development of these initiatives, the deployment, and that's sort of part of the challenge that you face and I'm sure many providers are facing today.

MS. HAHN: Yes.

MS. BOERNER: This is Verné with the Alaska Native Health Board. I just wanted to -- the last three speakers I think really did a great job in addressing some of the in-home care issues and some of the innovations that might occur but the lack of access, again, in rural communities is

so incredibly high across the United States and thinking about the regulatory barriers that have impacted the -- I mean, there are efficiencies that are not being tapped into that because of the limitations as to how they can be used is part of that.

When you think about non-technical issues, if you look at immunizations and you don't have a critical mass having access to those immunizations they're not effective. And similarly, with broadband if you don't have that critical mass with access to it you're not going to build that sort of awareness of it overall and then these innovative approaches can't get off the ground quite as easily. So, I think that's a part of an artificial barrier that might need to be addressed. Thank you.

MS. ZASADA: This is Jon, also in Alaska. I guess I had an experience recently that kind of gave me a little bit of perspective. I'm pessimistic about the increased affordability of rural broadband for residential use and I'm also

somewhat pessimistic about how much more affordable cell plans are going to become. I was recently in rural northern Canada, the Yukon Territory and the Northwest Territories, and in response to their desire to lower costs and increase access to in-home monitoring, they actually deployed old school 3G teleconnectivity and monitors that maximize at that level of speed in order to at least have a minimum base of home monitoring available for their patients. I know in talking to them that this is also a model that has been used in other rural countries that have centralized health systems. So, again, I think it's good to get it out on the record as one opportunity that other places are trying.

DR. AHERN: Thank you, Jon. I want to be respectful of time for participants. We're near our two-minute mark. Are there any other brief comments that any of our remaining participants would like to make before I turn it over to Chris for final comments? Hearing none, Chris, did you want to wrap up?

DR. GIBBONS: Sure, thanks, David. Again, let me on behalf of David and the entire Connect2Health Taskforce and the FCC thank each and every one of you for taking the time out of your busy schedule to give us your critical insights, your findings, and your thoughts.

We heard many things and I'll just briefly tick off a few of the top ones that impacted me. The increased need for more speed, problems around access and affordability, reimbursement. But also there are non-technical issues that get in the way and that there is a feeling that the FCC can have a role in overcoming those non-technical issues, if it's coordinating, getting people together, particularly in community is important. And also, as the last caller just talked about, sometimes low-tech technologies can be useful on an interim basis to get through a problem.

These are all fantastic. We look forward to continuing the conversation with you again. Please feel free to send us anything else

you would like us to know or did not get the chance to tell us. Our email is connect2health@fcc.gov. Thank you, again, for joining us today.

DR. AHERN: I would just also thank you all for joining us on the call today. We greatly appreciate the time that you've provided and your input. We will now conclude the session. Thank you.

OPERATOR: Ladies and gentlemen, that does conclude the conference for this afternoon. We do thank you very much for your participation and using the Executive Teleconference Service. You may now disconnect.

(Whereupon, at 2:59 p.m., the PROCEEDINGS were adjourned.)

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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